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PRE-APPEAL BRIEF REQUEST FOR REVIEW

Docket Number (Optional): 10844-33US

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to "Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)]

on September 16, 2005

Signature: Renee Conti

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Application Number	Filed
10/656,580	Sept. 4, 2003

First Named Inventor: Yoshiaki Tanaka

Art Unit	Examiner
2835	Anatoly Vortman

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal.

The review is requested for the reason(s) stated on the attached sheet(s).
Note: No more than five (5) pages may be provided.

I am the

- [ ] applicant/inventor.
- [ ] assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)
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NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below*.

- [x] *Total of 1 forms are submitted.

These statements by the Examiner are contradictory. On the one hand, the Examiner states that one would have expected the claimed and prior art alloys to have the same properties (see paragraph 1 above). On the other hand, the Examiner states that when experimenting with the prior art alloy, one would have noticed positive changes in physical properties, which would result in one optimizing such concentrations to arrive at the claimed material. If the properties of alloys having close ranges were expected to be the same, there would have been no motivation to modify the alloys to change their properties.

3. In any event, the Examiner has not demonstrated where such a motivation appears in the reference. Specifically, the Examiner has not shown, why, based on JP '724, one would have expected positive changes in physical properties to result from routine experimentation. The Examiner has also not cited any section of JP '724 which discusses breaking characteristics of the fuse. That is, the Examiner has not demonstrated why, based on JP '724, one would have been motivated to modify the elemental concentrations (and in particular the concentration of In) to enhance breaking characteristics. In fact, the Examiner only appears to rely on Applicant's description of JP '724 and does not refer to any specific sections of the reference at all.

According to MPEP 2142, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the reference, a reasonable expectation of success, and the prior art reference must teach or suggest all of the claim limitations. The teaching or suggestion to make the modification and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. No such teaching or suggestion is found in JP '724.

4. In order to arrive at the claimed In concentration from that recited in JP '724, one skilled in the art would have had to, while experimenting with the JP '724 alloy, increase the

concentration of In from the JP '724 range of 42-53 % to the claimed range of 55-74 %. This increase would have necessitated a reduction in the concentration of at least one of the other elements, such as to 5 % Bi, 40 % Sn or to 7% Bi, 38% Sn (below the recited ranges of Bi and Sn, respectively). However, JP '724 teaches away from reducing the Bi concentration to below 7% (see paragraph [0013]) by explaining that when the concentration of Bi is less than 7%, it becomes difficult to draw the alloy into a thin wire having a diameter of 350μm. JP '724 also teaches that the amount of Sn provides significant ductility for drawing the alloy into a thin wire (paragraph [0013]). There is no indication that the concentration of Sn could be reduced and still provide similar results.

5. The broad alloy of JP '724 contains 42-53% In. However, the preferred alloy composition of JP '724 contains 43-45% Sn and 7-9% Bi (leaving a remainder of 46-50% In), and the most preferred alloy of JP '724 contains 44.5% Sn, 7.4%Bi, and 48.1% In. Thus, preferred In concentrations are in the low to middle sections of the JP '724 range. That is, any optimization of this range by JP '724 pointed away from modifying the alloy to increase the In concentration to 55-74% (above the recited range). The § 103(a) rejection is clearly deficient for lacking a showing of such a motivation.

6. The MPEP states that differences in concentrations will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. In the present case, the concentrations of the component elements are indeed critical to the resulting alloy. For example, as explained in the Request for Reconsideration filed May 17, 2005 (pages 3-5), the concentration of In in the present alloy, 55-74%, is removed from the binary eutectic curve (47-50%) by at least 5% and as much as 27%, which makes the solid-liquid coexistence region as wide as 16°C. That is, the In range of the

claimed invention, which the Examiner contends to be "close" to the In range of JP '724, is actually not close at all, because the In range of JP '724 places the alloy on the binary eutectic curve, while the In range of the claimed alloy places it far removed from the binary eutectic curve.

In the alloy of JP '724, the concentration of In is on or in the vicinity of the binary eutectic curve, and the resulting alloy has a narrow solid-liquid coexistence region. JP '724 even teaches in paragraph [0004] that it is a requirement of an alloy used as a fuse element of a thermal fuse that the solid-liquid coexistence region be narrow. However, when this region is narrow, undesirable results are observed. Namely, the alloy during energizing and temperature rise is instantly changed from solid to liquid, which causes an arc to be generated easily during operation. The resulting local and sudden temperature rise causes vaporization of the flux and raises the internal pressure or chars the flux. In addition, the molten alloy or the charred flux is intensely scattered. Due to these occurrences, physical destruction, such as crack generation due to local and sudden internal pressure rise, or reconduction between charred flux portions, easily occurs during operation. Insulation distance is thus shortened and dielectric breakdown results.

The wide solid-liquid coexistence region which is exhibited by the present invention will eliminate these undesirable characteristics. Thus, the concentration of In is indeed critical to the present invention, and does support patentability.

7. Conclusion

In view of these remarks, it is respectfully submitted that the above errors of fact and omission of essential elements to establish *prima facie* obviousness render the outstanding rejection improper. Removal of the rejection and a Notice of Allowance are respectfully requested.

Respectfully submitted,

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September 16, 2005 By: Sandra M. Katz
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